Patent Claims:

1. A hybrid coupler (66, 67; 72, 73) having four ports and capable of coupling radio frequency signals having a certain frequency from at least one port to at least one other port,
characterized in that the hybrid coupler (66, 67; 72, 73) is implemented as a differential coupler arranged to couple differential radio frequency signals.

2. A hybrid coupler according to claim 1, characterized in that the hybrid coupler is implemented in a stripline technology.

3. A hybrid coupler according to claim 1, characterized in that the hybrid coupler is implemented in a microstrip technology.

4. A hybrid coupler according to any one of claims 1-3, characterized in that it is a 3 dB coupler, such that power of said frequency supplied to one port is split substantially equally between two other ports, while the remaining port is substantially isolated from the other ports.

5. A hybrid coupler according to claim 4, characterized in that it is arranged to split the power between the two other ports in such a way that the signals provided at these ports are in phase with each other.

6. A hybrid coupler according to claim 4, characterized in that it is arranged to split the power between the two other ports in such a way that the sig-

nals provided at these ports are in quadrature to each other.

7. A hybrid coupler according to claim 6, c h a r a c - t e r i z e d in that it is a line-coupled hybrid.

8. An amplifying circuit for radio frequency signals having a certain frequency and thus a certain wavelength, said circuit comprising at least:

- a first hybrid coupler (66; 72) having
  - an input port to which radio frequency signals can be applied,
  - an isolated port,
  - a first output port, and
  - a second output port,

  and being arranged for dividing a signal applied to the input port into a first signal component to the first output port and a second signal component to the second output port,
- a first amplifier (62, 63) having an input port and an output port, said input port being connected to the first output port of the first hybrid coupler (66; 72),
- a second amplifier (64, 65) having an input port and an output port, said input port being connected to the second output port of the first hybrid coupler (66; 72), and
- a second hybrid coupler (67; 73) having
  - a first input port connected to the output port of the first amplifier (62, 63),
  - a second input port connected to the output port of the second amplifier (64, 65),
  - an isolated port, and
  - an output port connectable to an output load impedance,

and being arranged for combining signals applied to the first input port and the second input port to the output port,

said first and second hybrid couplers and said first and second amplifiers providing a first and a second path for radio frequency signals from the input port of the first hybrid coupler (66; 72) to the output port of the second hybrid coupler (67; 73), said first path comprising the first amplifier (62, 63) and said second path comprising the second amplifier (64, 65),

and wherein the total electrical lengths of the two paths are substantially identical, and the electrical length from the input port of the first hybrid coupler to each of the input ports of the first and second amplifiers differs by a quarter of a wavelength for said radio frequency signals,

c h a r a c t e r i z e d in that said hybrid couplers (66, 67; 72, 73) are implemented as differential couplers arranged to couple differential radio frequency signals, and said amplifiers (62, 63; 64, 65) are differential amplifiers.

9. An amplifying circuit according to claim 8, c h a r a c t e r i z e d in that said first and second hybrid couplers are implemented in a stripline technology.

10. An amplifying circuit according to claim 8, c h a r a c t e r i z e d in that said first and second hybrid couplers are implemented in a microstrip technology.

11. An amplifying circuit according to any one of claims 8-10, c h a r a c t e r i z e d in that said first and second hybrid couplers are 3 dB couplers.

12. An amplifying circuit according to claim 11, c h a r a c t e r i z e d in that said first and second hybrid couplers are in-phase couplers, such that said first and second signal components on the output ports of the first hybrid coupler are in phase with each other, and signals in phase with each other applied to the two input ports of the second hybrid coupler are combined to one signal at its output port.

13. An amplifying circuit according to claim 11, c h a r a c t e r i z e d in that said first and second hybrid couplers are quadrature couplers, such that said first and second signal components on the output ports of the first hybrid coupler are in quadrature to each other, and signals in quadrature to each other applied to the two input ports of the second hybrid coupler are combined to one signal at its output port.

14. An amplifying circuit according to claim 13, c h a r a c t e r i z e d in that said first and second hybrid couplers are line-coupled hybrids.

15. A portable radio communications device comprising an amplifying circuit according to any one of claims 8-14.

16. A portable radio communications device according to claim 15, c h a r a c t e r i z e d in that the device is a mobile telephone.

17. A method of amplifying radio frequency signals having a certain frequency and thus a certain wavelength, said method comprising the steps of:

- applying radio frequency signals to an input port of a first hybrid coupler (66; 72),
- dividing the signals applied to the input port into a first signal component to a first output port of

the first hybrid coupler and a second signal component to a second output port of the first hybrid coupler,

- amplifying said first signal component in a first amplifier (62, 63) having an input port and an output port, said input port being connected to the first output port of the first hybrid coupler (66; 72),
- amplifying said second signal component in a second amplifier (64, 65) having an input port and an output port, said input port being connected to the second output port of the first hybrid coupler (66; 72),
- coupling the amplified first signal component from the output port of the first amplifier (62, 63) to a first input port of a second hybrid coupler (67; 73) and the amplified second signal component from the output port of the second amplifier (64, 65) to a first input port of the second hybrid coupler (67; 73),
- combining in the second hybrid coupler (67; 73) the signals applied to the input ports thereof to an output signal on the output port of the second hybrid coupler, and
- coupling said output signal to an output load impedance,

wherein the total electrical lengths of the paths of the two signal components from the input port of the first hybrid coupler to the output port of the second hybrid coupler are substantially identical, and the electrical length from the input port of the first hybrid coupler to each of the input ports of the first and second amplifiers differs by a quarter of a wavelength for said radio frequency signals,

c h a r a c t e r i z e d in that the radio frequency signals are applied, coupled and amplified as differen-

tial signals from the input port of the first hybrid coupler (66, 72) to the output port of the second hybrid coupler (67; 73).

5